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1 Features and Specifications

1.1 Functions

It digital video camera is designed with highly integrated digital video processor and sophisticated processing algorithm. With advanced CMOS image sensor and high-resolution TFT LCD display, it has many functions and very high cost performance. It is small, fashionable and low power consumption. Accessories and optional parts are bundled.

Features:

- MPEG4, HD video recording, 30 frames of images per second, with synchronized sound recording
- Still picture photographing, with 5 mega pixels image size.
- Still pictures and video clip playback
- Digital sound recording, voice annotation to the photos or continuous sound recording
- PC camera for internet communication.
- MP4 files playback
- MP3 play
- Audio and video outputs to TV and headphones,
- Portable USB mass storage.
- 2.4” TFT LCD display.
- 270 degrees rotational display.

1.2 Technical Specifications

Image sensor	5.17 mega pixels CMOS
Image size	2560x1920，2048×1536，1600×1200，800×600
Interpolated image size	4640×3480，4000×3000，3264x2448，
Image quality	Fine/ Normal/ Basic
Color Depth	24-bit true colors (RGB)
Display	2.4" TFT LCD
Lens	F2.8, fixed focus
Zoom	Digital zoom, 4X at image capture, 16X at playback
Shooting distance	1m ~ infinity
Shutter speed	1/2-1/1000 second
Exposure	Automatic
Exposure compensation	-2 to +2EV value, at 1/2EV step.
White balance	Auto, Sunny, Cloudy, fluorescent, tungsten
Shooting interval	<3 sec
Continuous shooting	4 photos
Playback delay	<3 sec
Timer	10 sec delay
Built-in Flash	Auto/ On/ off
Recharge time of Flash	<8 sec (when full-recharged battery is used at normal temperature)
Effective range of flash	1-2 m
On-board memory	32MB flash memory
Removable memory	SD / MMC card
File format	JPEG+Exif2.2
PC camera	30 fps @ CIF image
Video recording	MPEG-4, HD(1280X720), D1(720X480), QVGA or VGA @ 30fps
Music player	MP3 play
Video play	MP4 play
Voice function	Voice recording and playback
ISO sensitivity	Auto
Operating system	Windows 98/Me/2000/XP/Vista, above Mac OS 8.0
Menu language	English, French, German, Spanish, Dutch, and Italian
External interface	USB2.0 High Speed, AV output
Power supply	Rechargeable Lithium Ion battery
Dimensions	102x57x23mm
Weight	105 grams (excluding battery)

2 Appearance and Accessories

2.1 Appearance

1. Joystick and OK button
2. Shutter
3. Mode
4. Menu
5. Power
6. Strap holder
7. Microphone
8. Speaker
9. Power/ Battery charge LED

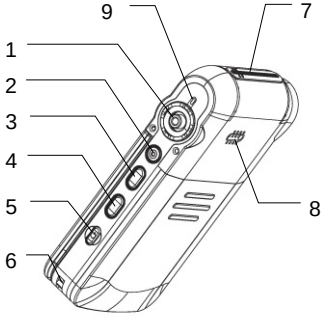


Fig. 2-1

10. Flashlight
11. Lens
12. Audio output jack
13. Video output jack
14. USB connector
15. SD Card slot
16. Battery door

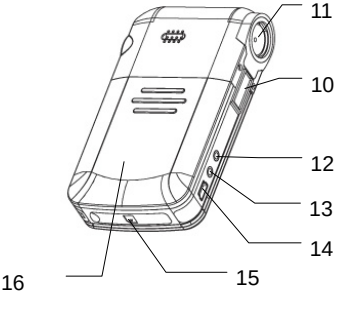


Fig. 2-2

Shutter:
In capture mode, take a photo or start/stop capturing a movie.
In playback mode, voice recording and playback.
In MP4 mode, play/stop a movie file.
Microphone:
Convert sound wave to electrical signal for voice recording.
Flashlight:
Illumination objects in dark environment for photo taking.
See flash mode setting for operations.
Lens:
Allow the CMOS sensor picking up image of the object.
USB connector:
When connected to the power adapter, the video camera operates with external power supply and the battery is charging.
When connected to the computer, the video camera battery is charging and the camera operates in mass storage or PC camera mode.
Audio output interface:
Connect to audio input of TV set with the audio cable.
Connect to earphones for audio or MP3 playback.
Video output interface:
Connect to video input of TV set with the video cable. The camera can display pictures or play videos on TV.
Speaker:
Play operation prompt sounds, or voice playback
Power/ Battery charging LED:
Turn off when the video camera is switched off.
Red LED turns on when the video camera is switched on.
Red LED flashes while the flash is recharging.
Green LED turns on when the camera is charging.
When the camera is power on and charging at the same time, the LED turns orange.
Mode key:
Enter mode selection.
Joystick:
It is multi-functional. It is used in menu selection, digital zoom, panning, file lock/unlock, and volume control. Use your thumb to push it up, down, left or right.
Ok button:
Press down the joystick to go to the submenu or selection confirmation.
Strap holder:
Use for fixing the strap.
Battery door:

Slide the battery door downwards to open the compartment for battery replacement.

SD Card slot:

Remove the SD card slot cover. Insert a card. Push the card for ejection.

Menu button:

Enter/ Exit the menu.

Power button:

Switch on/off the video camera

LCD:

Liquid crystal display which displays video images, still pictures, status icons, menu and list of music or video files.

2.2 Accessories

Strap

USB cable

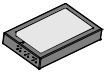
TV cable

Video camera pouch

Driver disc

User's Manual

Earphone



lithium battery

AC adapter

warranty card

3 Preparations before Use

3.1 Battery Installation

Install the battery by following the steps:

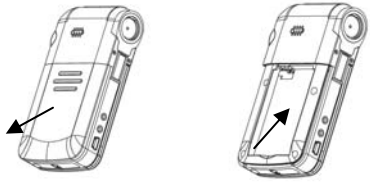


Fig.3-1

- Open the battery cover by sliding it downwards.
- Place the battery into the compartment.
- Ensure the metal contacts of the battery are in the same orientation as the battery contacts in the battery compartment.
- Charge the battery before use. (See " Charge Battery" section for details)

❶Do not remove the battery when the video camera is in use.

3.2 Use external power supply

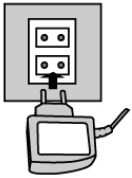


Fig.3-2

Fig.3-3

- Connect the connector of the AC adapter to the USB connector on the camera.
- Press the Power switch to turn on the camera, and it will work as it does with a battery.
- Battery charging: place the battery to be recharged into the camera. Connect USB port of the camera to the AC adapter or to the USB port of a PC. The charge green LED lights. It takes about 4 hours for charging, the LED goes out when charging completed.

3.3 Install SD Card

- Open the rubber cover
- Insert SD card as shown into the SD card slot
- To remove the SD card, press it with a finger and the card will be ejected.

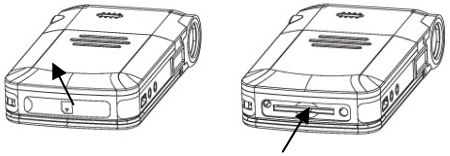


Fig.3-4

3.4 Install hand strap

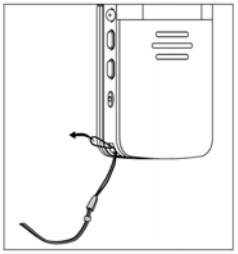


Fig.3-5

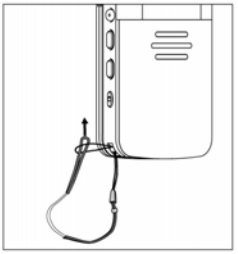


Fig.3-6

- Run the ring at one end of the strap around the strap fixing pin as shown in Fig. 3-5
- Run the strap through the ring, and then tighten it by pulling as shown in Fig. 3-6.

3.5 Switch on/off the Video Camera

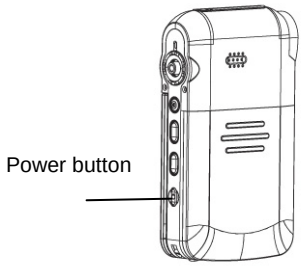


Fig.3-7

【Switch on the video camera】
Press the Power button to turn the camera on. A splash video will be displayed on the LCD. Then, the mode video recording will appear.

【Switch off the video camera】
Press the Power button to turn the camera off while the video camera is turned on. In order to reduce power consumption, the video camera will automatically switch off if no operation occurs within the preset time. See automatic power-off function in the Setup menu.

【Solution to system hang up】
If camera hangs up and the Power button does not function, open the battery door, take out the battery and put it back. Power on the camera again.

3.6 Install the PC Camera Driver

3.6.1 Automatic installation of Camera drivers

- Before connecting the digital video camera with a computer, the device driver has to be installed.
- Insert the installation CD into the CD drive of your PC. Assuming the CD drive is located at X:\Driver,
- Open the 'Driver' folder in F drive and execute the 'setup.exe' program by double clicking the file.
- The installation process will start and after couple of seconds, the dialog as shown in Fig.3-8 will appear.
- Click "Finish" to complete the installation.

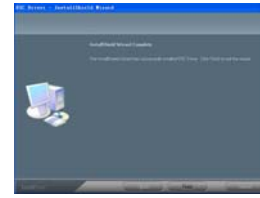


Fig. 3-8

3.6.2 Manual installation of PC camera driver

- Set the video camera to PC camera mode. Insert the installation CD into the CD drive of your PC. Connect the camera with the USB cable to the PC. A dialog box shown in Fig. 3-9 will appear.
  ❶ For details of setting the PC camera, please see Section 4.2.9 "Internet video Camera".

Fig. 3-9

- Select "Search for Latest Driver for the Device" and click "Next".

- Dialog box as shown in Fig.3-10 appears, click "View" and Select the folder, "X:\PC_Cam\Win98_2K" or "X:\ PC_Cam\winme_xp_Vista32" or "X:\ PC_Cam\win_xp_Vista64" for different systems.

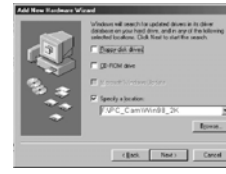


Fig.3-10

- Click “Next”. After a window as shown in Fig. 3-11 appears, click “Finish” to complete the installation.

Fig. 3-11

3.6.3 Install the removable driver

WIN2000/XP have built in removable drive driver, no driver installation is required.

Installation of removable drive driver for Win98 operating system

- Set the camera to still picture or playback mode, and connect it with the USB cable to the PC. A dialog box as shown in Fig. 3-12 will appear. Click “Next”, an dialog box shown in Fig. 3-13 will appear.

Fig. 3-12

- Select “Search for Latest Driver for the Device” and click “Next”.

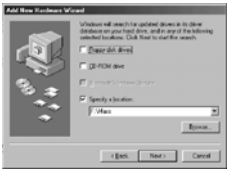


Fig.3-13

- Dialog box as shown in Fig.3-14 appears, click “View” to view CD disk and locate the folder at “X: \ Mass”
(Assuming CD drive is located at X:).

Fig. 3-14

- Click “Next” accordingly

Fig. 3-15

- When installation finishes, the dialog box as shown in Fig. 3-16 appears.

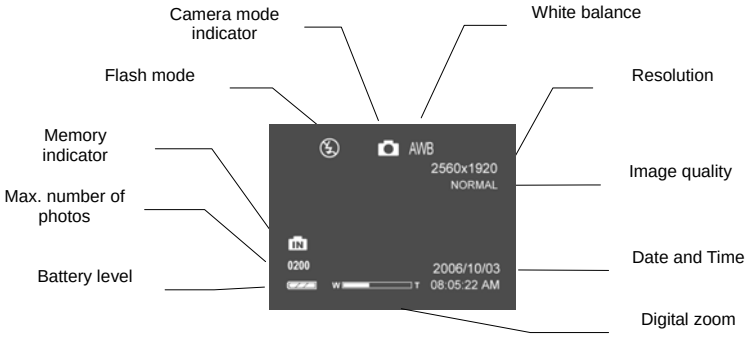
Fig. 3-16

4 Operation of the Video Camera

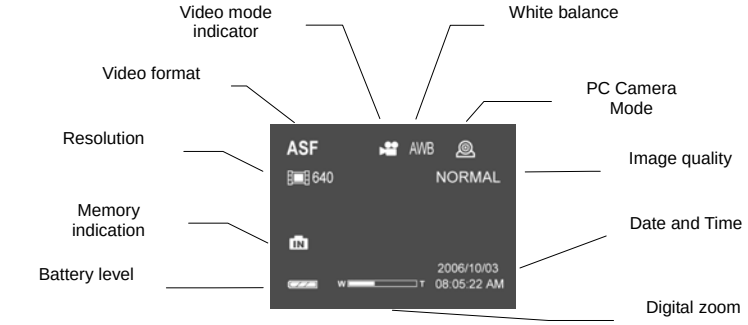
4.1 Display Icons

Before reading the basic operation instructions, you should understand the icons on the LCD screen as shown below.

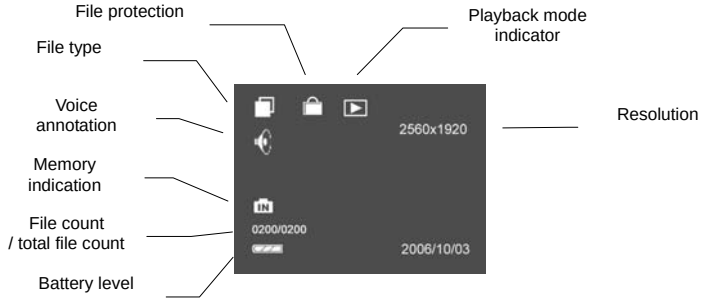
Camera mode display



Video recording display



Playback mode display



4.2 Modes of operations

The video camera operates in seven modes as shown below:

1. Camera
2. Video recording
3. Playback
4. System setup
5. Audio recording
6. MP3 playback
7. MP4 playback

Camera

Video

Playback

Setup

Audio

MP3

MP4

Mode selection:
- The camera enters the last mode you have selected when power on.
- Press Mode key for mode selection.
- Push the joystick left or right for mode selection.
- Press down the joystick (OK key) to enter the selected mode.

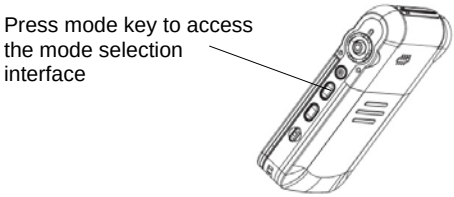


Fig. 4-1

4.2.1 Video recording mode

- Press the Shutter to start / stop video recording.
- The recording process will stop when memory is full.

❶ In order to obtain good image quality, hold the video camera steadily and pan slowly during video recording.

Setting of video recording menu:
- Press the MENU key for video mode options setup.
- The menu as shown in Fig.4-2 will be displayed. Push the joystick to select the menu item and press the joystick (OK key) to enter the selected item.

Fig. 4-2

The following table lists the options for each video menu item:

Video format	ASF，AVI，WMV
Resolution	1280X720，720X480，640X480，320X240
Video quality	Fine, Normal, Basic
White balance	Auto, Sunny, Cloudy, Fluorescent, Tungsten
EV compensation	-2 ~ +2EV, at 1/2EV step
Photo effect	Normal, Sepia, B/W, Soft and Vivid
Anti-vibration	On/ Off

4.2.2 Camera mode

【Taking single photo】

Aim the camera to your object and press the shutter to take a picture.
❗ Image can be zoomed digitally by pressing ▲ or ▼ key (pushing the joystick up/down)

The camera is set to Single Shot whenever the Camera mode is activated.

If the camera has been switched to Continuous shots or self timer modes, Single Shot can be selected by the menu function as described below

- Press MENU key, and menu screen appears,
- Select "📷" option as shown in Fig. 4-3.
- Press OK key for confirmation, the option screen as shown in Fig. 4-4 appears.
- Select "Single Shot", press OK key for confirmation.

Fig. 4-3

Fig. 4-4

【Continuous shots of multiple photos】

In continuous shots mode, the camera will take 4 photos continuously by pressing the shutter button.
❗ The video camera should be kept still when multiple photos are shot continuously,

- Use the Menu function to set continuous shots mode.
- Press MENU key, and menu screen appears,
- Select "📷" option as shown in Fig. 4-5.
- Press OK key for confirmation, the option screen as shown in Fig. 4-6

appears.

- Select “Continuous Shots” option and press OK key for confirmation

Fig. 4-5

Fig. 4-6

【Self-Timer】

In self-timer mode, picture will be taken at 10 seconds after pressing the Shutter button.

Use the Menu function to set self-timer mode, similar single shot and continuous shots.

Fig. 4-7

Fig.4-8

The following table lists the options for each camera menu item.

Capture Options	Single shot, Continuous shots, Self-Timer
White balance	Auto, Sunny, Cloudy, Fluorescent, Tungsten
EV compensation	-2 ~ +2EV, at 1/2EV step
Resolution	4640×3480，4000×3000，3264x2448，2560x1920，2048×1536，1600×1200，800×600
Image quality	Fine, Normal, Basic
Photo effect	Normal, Sepia, B/W, Soft and Vivid
Flash mode	Auto, off, On

4.2.3 MP4 playback mode

A movie play list will be displayed when this mode is activated.

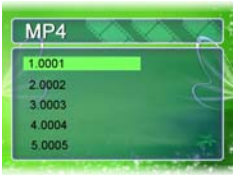


Fig. 4-9

Fig. 4-10

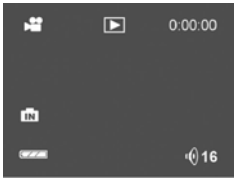


Fig. 4-11

Use the joystick and shutter button to control the movie playback.
The following table shows the key functions:

	MP4 playback	Play list
◀	FR (fast reverse) the movie; return to the play list when the movie is stop	
▶	FF (fast forward)	
▲	Increase audio volume	Select previous file
▼	Reduce audio volume	Select next file
MENU		Enter and exit the delete menu
OK		Play the selected movie
Shutter	Start/Stopping playing a movie	

【Download MP4 files】
If an empty list is displayed after the video camera is switched over to MP4 mode, MP4 file should be downloaded first.

The process is as follows:
- Connect the video camera to a PC in Mass Storage mode.
- Open the removable storage device and create a folder named “MPEG” under the root directory. If this folder already exists, this step can be skipped.

Convert the movie stored in the computer to AVI format and then copy it to “MPEG” folder.

4.2.4 Playback mode

When the playback mode is activated, the last picture, video, or voice file is displayed. The Icon on the top left corner of the display shows the file type.

4.2.5 Photo playback

- Use ◀ key to view previous photo; use ▶ key to view next photo.
- Use ▲▼ keys to zoom in/out the current photo.

【Display thumbnails】
Display thumbnails of photos with the following procedures.

- Press MENU key and the menu screen appear. Select ▶ with the joystick and press OK key for confirmation.
- Select “DISPLAY FORMAT” with ▲ or ▼ key: 2x2, 3x3, 4x4, and press OK key for confirmation. If 3x3 is selected, the display is as shown in Fig. 4-14.
- Use the joystick to select a photo or scroll the thumbnail pages.
- Press OK key to display the selected photo.

Fig.4-12

Fig.4-13

Fig.4-14

4.2.5.1 Video Playback

- The picture marked with 🎬 represents a video file.
- Press Shutter key to start to playback the video file.
- Pause the playback, press Shutter key once again.
- Adjust audio volume by pushing the joystick ▲ or ▼.

4.2.5.2 Voice file Playback

The display with message on the top left corner represents a voice file.

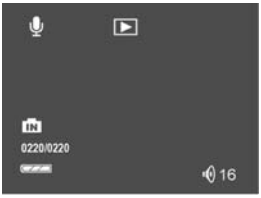


Fig.4-15

Press Shutter key to start/stop voice playback.
Adjust audio volume by pushing the joystick ▲ or ▼.

4.2.5.3 Voice annotation to a photo

【Record a voice annotation】

- Select the picture to which voice annotation will be attached.
- The message “Voice recording” as shown in Fig. 4-16 appears on the screen during voice recording,.
- To stop the voice annotation, press Shutter key once again.

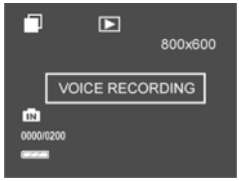


Fig. 4-16

【Play the voice annotation】

- A picture file an icon on left upper corner of the display as shown in Fig. 4-17 indicates this photo includes a voice annotation.
- Press Shutter key to playback voice annotation. To pause, press Shutter key once again.
- Voice annotation play can be repeated.

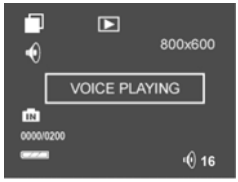


Fig. 4-17

【Delete voice annotations】
Please see “Delete Files”.

4.2.6 MP3 Playback Mode

MP3 play list as shown in Fig.4-18 is displayed when MP3 playback mode is activated. Fig 4-18 shows the screen during playback.

Fig.4-18

Fig.4-19

Fig.4-20

Key Operations:

▲ ▼: Select a MP3 file in play list.
Adjust the volume level during playback.

▶: Switch play modes in the following sequence:
Play sequentially , repeat single track , repeat playing in sequence , random play

◀: Pause and continue the playing during playback.
Return to play list when playing is stop.

OK: Start and stop playing.

MENU: Go to MP3 file deletion menu while no MP3 file is playing.

Download MP3 files

If an empty list is displayed after the video camera is switched over to MP3 mode, MP3 file should be downloaded first. The process is as follows:

1. Set the video camera to Portable Hard disk mode and connect it with a computer.
2. Open the portable hard disk and create a folder named “MP3” under the root directory. If this folder already exists, this step can be skipped over.
3. Copy the MP3 songs stored in the computer to this MP3 folder.

4.2.7 Audio recording

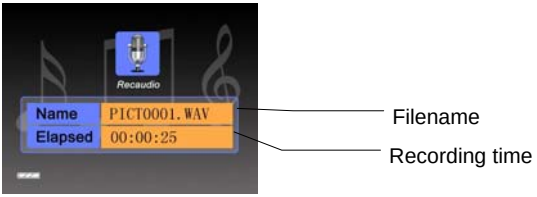


Fig.4-21

Press Shutter key to start recording; press again to stop recording.

Recorded voice file is in WAV format, and recording duration depends on storage capacity.

4.2.8 System setup

Fig.4-22

The following table shows the menu items and options:

Date settings	Year/Month/Day Hour/Minute am(pm)
Date/Time Display	Year/Month/Day/Hour/Minute Year/Month/Day
Time stamp	On / Off
TV system	NTSC / PAL
Key tones	On /Off
Format	Internally / SD card
Select Memory	Internally / SD card
LCD Self-Off	15s / 30s / Never
Camera Self-Off	60s / 120s / Never
Language	English, French, German, Spanish, Dutch, and Italian
Factory Reset	Reset / Cancel
System Version	Model / HW VER / FW VER / ZCHFIX

4.2.9 Removable drive mode

- Set the camera in any mode except video mode.
- Connect the camera to your PC with the USB cable.
- The camera will be connected as a removable mass storage device.
- Fig.4-23 will be displayed on the LCD.

Fig.4-23

Click “My Computer” icon on your PC, you will see a new Removable Disk as shown in Fig. 4-24. You can manipulate files on the drive same as that on other drives.

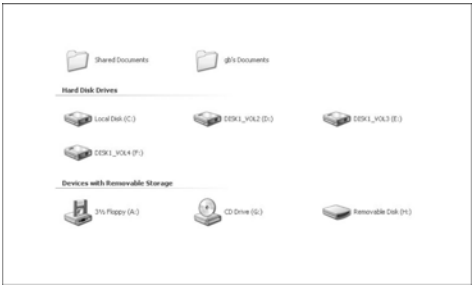


Fig.4-24

4.2.10 PC Camera mode

The video camera can act as a PC camera when connected to your personal computer (PC) via USB. Compressed video images can be displayed at real time on the PC screen and transmitted over the Internet.

- Switch the video camera on. Chang the mode to Video mode.
- Connect the video camera to your PC; it acts as PC camera.

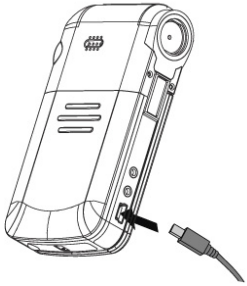


Fig. 4-25

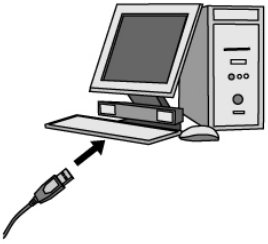


Fig.4-26

❶ Refer to “Install PC camera driver” to install the device driver on your PC before using the camera as a PC camera.
If the camera is in video camera mode, pressing Mode key will change over to Portable Hard disk mode.

5 File Management

Select playback mode and press MENU button to go to the Playback menu for file management functions.

5.1 Delete Files

Select “Delete Current”, “Delete All” or “Delete Voice”, and press OK key to execute corresponding operation.

【Delete Current】:
Delete currently selected photo, video or voice file.
Select “Yes” to confirm to delete; Select “No” to do nothing.

Fig.5-1

Fig.5-2

【Delete All】:
Delete all the unprotected photo, video and voice files on the camera.

【Delete Voice】:
Delete the voice annotation of the current photo.

【Format】:
Format the memory system; all information and data stored in the memory will be deleted. In some cases, new cards or cards used in other system may need formatting before using.

5.2 File Protection

File protection means protecting specified photos or images from being deleted or voice annotations being added to or deleted.

Fig.5-3

Fig.5-4

Enter the Playback menu and select , then press OK key for confirmation. Select LOCK or UNLOCK item, and then press OK key for confirmation.

【Lock】:
Enable protection function. When locked photo is displayed, a icon will appear on the left upper corner of the photo, as shown in Fig.5-5.

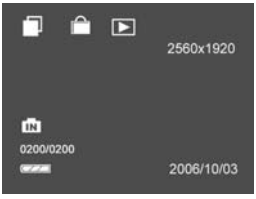


Fig.5-5

【Unlock】:
Used to disable the protection function. An unprotected photo will not have the icon displayed on the left upper corner of the photo.

6 Connection to TV

Connect video and audio jack of the video camera to the video and audio input terminals of your TV with the AV cable as shown in Fig. 6-1.

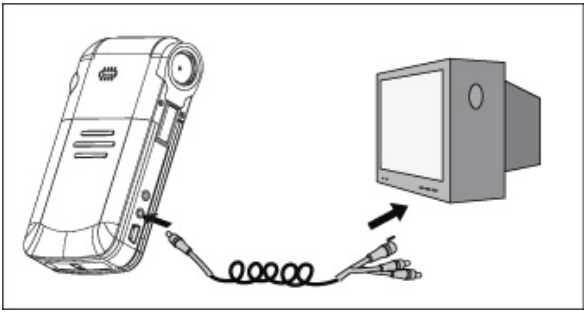


Fig. 6-1

After connection, LCD will be turned off, images and sound will be played on the TV set.

❶ “TV System” in the system setup menu should match your TV system. Select PAL or NTSC correspondingly.

Fig.6-2

Fig.6-3

7 Additional Information

7.1 Keep the video Camera clean

Always keep the video camera clean, especially the lens and LCD. Do not touch the lens or you will leave fingerprint on it.

Follow the instructions to clean the camera:

- Camera body:
  Clean the camera body with a piece of soft cloth moistened with water, then wipe the body with a dry cloth. No chemical detergent can be used in order to avoid any damage to the finish or casing.
- LCD:
  Refer to video camera body cleaning procedures. Take care not to put much pressure on the LCD.
- Lens:
  Wipe the lens with soft cloth to remove fingerprints, dust, etc.

7.2 Precautions for Use of Video Camera

- Do not shoot towards strong light for a long time.
- Do not use or store the video camera in a place of high humidity, high temperature or high dust content.
- Keep the video camera far away from strong electromagnetic fields.
- Avoid strong impact and vibrations.
- Remove the battery from the video camera if it is not in use for a long period.
- Never use any batteries or AC adapters that are not compatible with the video camera.
- Do not try to open the video camera enclosure. The camera must be serviced by qualified persons only.
- Keep the video camera clean.

7.3 Precautions for Use of Power Supply

- When carrying or using the batteries, avoid short circuit of the two polarities of the battery.
- Do not dismantle the batteries or AC adapter.
- Never throw batteries into fire or chemical solvent.
- Only rechargeable lithium battery or AC adapter supplied with the video camera can be used for the camera
- Recharge lithium batteries strictly according to the provided instructions.
- Battery heating is normal during recharging process, but if it is

overheated, recharging must be stopped.

- If the video camera is not in use for a long period, the battery should be removed.
- If AC adapter is overheated during its use, it should not be used any longer.
- Avoid shock or impact on the battery or AC adapter
- Avoid unexpected accidents, the battery and AC adapter should be placed out of children's reach,
- Aged batteries should be recycled according to related regulations of the State to protect environment.

7.4 Troubleshooting

Symptoms	Possible Causes	Solutions
No response when power button is pressed.	● The battery has low voltage. ● The AC adapter does not supply the voltage normally.	● Replace it with a new one. ● Check if AC adapter and supply socket are normal.
The video camera suddenly stops during operation after operating for some time.	● The battery has low voltage. ● No battery is inside the video camera or AC adapter is powered off.	● Replace or recharge the battery ● Check if AC adapter works normally.
The video camera suddenly stops during operation after having not operated for some time.	● It has been in standby state for a long period and automatically switches off.	● Restart the video camera. ● Disable automatic switch-off.
The battery is used up very soon	● It is not fully recharged ● It is aged.	● Correctly recharge the battery to full capacity ● Replace it
The video camera gives an error message after SD card is inserted.	● The card is not formatted ● Bad contact	● Format it ● Clean card contact and reinsert it.
Flash does not work.	● The battery has low voltage ● It is set to flash off mode.	● Correctly recharge the battery to full capacity ● Change Flash mode

Sound recording time

are not	● The lens is dirty ● Digital Video Camera shakes during capture	● Clean the lens according to above-mentioned requirements. ● Take correct posture.
There are speckles on images or pictures.	● Insufficient illumination. ● Strong electromagnetic interference around the camera.	● Increase illumination or use the flash. ● Keep it far away from interference source.
No beep tones.	● Sound effect is OFF.	● Turn on touch tone on the menu bar
No pictures are saved after shutter key is pressed.	● The SD card is damaged. ● Memory is full. ● The SD is write protected. ● Wrong SD card format.	● Replace it. ● Remove some files on it. ● Disable write protect ● Format the card.
Pictures or videos cannot be deleted.	● They are locked.	● Unlock them before deleting.
Photo is very bright or dark	● Viewing center is too bright or dark. ● Improper exposure compensation.	● Move the bright or dark object away from viewing center. ● Adjust exposure compensation setting
Color deviation.	● White balance is inconsistent with actual illumination.	● Select proper white balance or use automatic white balance.
Removable disk is not available	● The operating system running on the PC is the version prior to Win 2000 and no correct driver is installed. ● It is in PC camera mode.	● Install the driver correctly. ● Set to removable mass storage mode.
No PC camera function	● PC camera driver is not installed in the PC. ● It is in Removable mass storage mode.	● Install the driver correctly. ● Set the video camera to PC camera mode.